

General Biology

EFFECT OF ROSE BENGAL ON SALICYLIC ACID METHYL TRANSFERASE GENE EXPRESSION AND SALICYLIC ACID ACCUMULATION IN TOBACCO

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Salicylic acid (SA) has been shown to be an important signal in activating systemic acquired resistance (SAR) in plants. Endogenous levels of SA are known to increase in response to active oxygen species (AOS) generated during plant-pathogen interactions. A SA derivative, methyl salicylate (MeSA), has been hypothesized to be an alternative mechanism in activating SAR. The salicylic acid methyl transferase (SAMT) gene catalyzes MeSA formation. Tobacco plants (*Nicotiana tabacum* L. cv Xanthi-nc, NN genotype) were treated with the AOS generator rose bengal (RB; 40mM) to determine the effect of free radicals and SA accumulation on the expression of the SAMT gene. Plants transformed with the bacterial *nahG* gene (unable to accumulate SA) were also investigated to determine the effect of free radicals on SAMT expression under reduced levels of SA. Total SA level in RB-treated non-transgenic NN tobacco leaves increased within twenty-four hours of treatment and remained elevated at forty-eight hours. SAMT gene expression in RB-treated non-transgenic NN tobacco leaves also increased within twenty-four hours and remained elevated at forty-eight hours. The RB-treated transgenic *nahG* tobacco leaves did not exhibit any increase in total or free SA after 48 hours. Currently, the expression of SAMT is being investigated in RB-treated *nahG* tobacco. Our most recent data from ongoing studies will be presented at the meeting. Supported by NSF-REU grant to Western Michigan University.